FACT SHEET FOR NPDES PERMIT WA0024431
CLALLAM BAY SEWAGE TREATMENT PLANT

9/5/2002

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INTRODUCTION

The Federal Clean Water Act (FCWA, 1972, and later modifications, 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One of the mechanisms for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System (NPDES) of permits, which is administered by the Environmental Protection Agency (EPA). The EPA has delegated responsibility to administer the NPDES permit program to the state of Washington on the basis of Chapter 90.48 Revised Code of Washington (RCW) which defines the Department of Ecology's (Department) authority and obligations in administering the wastewater discharge permit program.

The regulations adopted by the state include procedures for issuing permits [Chapter 173-220 Washington Administrative Code (WAC)], technical criteria for discharges from municipal wastewater treatment facilities (Chapter 173-221 WAC), water quality criteria for surface and ground waters (Chapters 173-201A and 200 WAC), and sediment management standards (Chapter 173-204 WAC). These regulations require that a permit be issued before discharge of wastewater to waters of the state is allowed. The regulations also establish the basis for effluent limitations and other requirements which are to be included in the permit. One of the requirements (WAC 173-220-060) for issuing a permit under the NPDES permit program is the preparation of a draft permit and an accompanying fact sheet. Public notice of the availability of the draft permit is required at least thirty days before the permit is issued (WAC 173-220-050). The fact sheet and draft permit are available for review (see Appendix A--Public Involvement of the fact sheet for more detail on the Public Notice procedures).

The fact sheet and draft permit have been reviewed by the Permittee. Errors and omissions identified in this review have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. The fact sheet will not be revised. Comments and the resultant changes to the permit will be summarized in Appendix D--Response to Comments.

GENERAL INFORMATION	
Applicant	Clallam County
Facility Name and Address	Clallam Bay Publicly Owned Treatment Works 410 Frontier Street Clallam Bay, WA
Type of Treatment	Rotating Biological Contactor (RBC)
Discharge Location	Strait of Juan de Fuca (note updated lat/long) Latitude: 48° 15' 44" N Longitude: 124° 15' 21" W.
Water Body ID Number	48124C2G5

BACKGROUND INFORMATION

DESCRIPTION OF THE FACILITY

HISTORY

The adjacent towns of Clallam Bay and Sekiu have nearly identical sewage treatment systems both consisting of Rotating Biological Contactors (RBCs). The Sekiu permit was rewritten and issued in March 2000. This permit will cover only the Clallam Bay facility. The communities are not incorporated and the sewage treatment systems are administered by Clallam County. The Clallam Bay system began operation in 1977 and was built to replace failing on-site septic systems.

COLLECTION SYSTEM STATUS

The collection system has two pump stations that serve the Clallam Bay community. The "Pioneer Street" station serves approximately 90 percent of the system flow. The rest of the flow is made up by the "Lighthouse" station. The age of the collection system is the same age as the plant and therefore dates to the 1970s. The collection system uses a four-inch force main made of ductile iron to the treatment plant and 8-inch gravity mains made of PVC pipe. The operators continue to evaluate inflow and infiltration (I&I) problems and work on solutions when problems are found. Most problems found have been centered around the connections from residences to the main lines and flooding at clean out points.

TREATMENT PROCESSES

The treatment at the facility begins with a bar screen, a grit chamber, primary sedimentation, parallel rotating biological contactors, secondary clarification, and ends with chlorination. Sludge from the secondary clarifier is stored and thickened in an aerobic digester before being sprayed on forest lands near the town of Clallam Bay. There are no industrial users that discharge to the system. There are a couple of restaurants and motels that cater to the sport fishers. Loads to the plant can increase during the fishing season which is generally in the spring through early summer.

The plant is a Class II facility as defined under WAC 173-230-140 and therefore requires an operator of at least Group II certification. The plant is staffed by a Group II certified operator and a Group I certified operator seven days per week from 7:30 a.m. to 4:00 p.m. The plant has regularly provided training for new operators and until recently had an operator in training on staff.

DISCHARGE OUTFALL

The outfall starts from the shore approximately 1,500 feet south of Slip Point near the end of Fisherman Street and travels 1,200 out into Clallam Bay in a northwest direction. The outfall ends in approximately 18-feet of water (MLLW) with a 46-foot diffuser. The diffuser has eight 4-inch ports that are spaced 5 feet apart. The outfall was last examined by divers on March 18, 1993, and appeared to be in excellent condition at that time. (See vicinity map and outfall detail in Appendix C). The San Juan Current Guide shows nearshore currents in this area of the Strait of Juan de Fuca to average 0.5 knots (0.257 m/sec).

RESIDUAL SOLIDS

The treatment facility removes solids during the treatment of the wastewater at the headworks (grit and screenings), and at the primary and secondary clarifiers, in addition to incidental solids (rags, scum, and other debris) removed as part of the routine maintenance of the equipment. Grit, rags, scum and

screenings are drained and disposed of as solid waste at the local transfer station. Solids removed from the secondary clarifier are treated using aerobic digestion then thickened to 1.5 percent to 3 percent solids through settling and land applied or otherwise managed under a statewide biosolids permit from the Department. Biosolids must be managed in accordance with WAC 173-308 Biosolids Management Rule.

PERMIT STATUS

The last permit for this facility was issued on August 22, 1985, with an original expiration date of August 22, 1990. The permit was extended in February of 1990 and again in May of 1997. The previous permit placed effluent limitations on five-day Biochemical Oxygen Demand (BOD_5), Total Suspended Solids (TSS), pH, and Fecal Coliform bacteria.

An application for permit renewal was received by the Department on February 1, 2001, and accepted by the Department on March 18, 2002.

SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT

The facility received its last inspection on February 7, 2002. No sampling was conducted at that time. No problems were found with the plant at that time. Frank Meriwether with the Washington State Department of Health, Shellfish Program conducted a comprehensive evaluation of the treatment facility on January 7, 1998, noted in an April 10, 1998, memo. The main problem noted in that memo was hydraulic surges in the plant that appeared to impact treatment and disinfection reliability as related to the Department of Health's criteria for shellfish harvesting.

During the history of the previous permit, the Permittee has not remained in total compliance for a several parameters. For the most part, the facility is well run and does a fair job removing BOD, TSS, and other pollutants (see Characterization below). However, the facility has had difficulty meeting the pH lower limit and has exceeded the design capacity for the average monthly flow for more than three consecutive months, and the BOD daily maximum limit was not met on several occasions.

WASTEWATER CHARACTERIZATION

The concentration of pollutants in the discharge was reported in the discharge monitoring reports. Table 1 shows the characterization of the effluent based on Discharge Monitoring Reports (DMRs) submitted to the Department and inspections conducted by the Department. The effluent is characterized as follows:

Table 1: Characterization of Effluent (Based on DMRs from 1/1999 – 12/2001)

Parameter	Effluent average*, maximum or minimum as specified	Limit or Design Value
Flow	0.027 mgd avg. monthly 0.112 mgd avg of max monthly flow	0.12 mgd
pH	5.2 min, 8.1 max	6.0-9.0 standard units **4 violations below min**.
BOD mg/L	19.5 avg monthly 31.3 (95^{th} percentile)	30 mg/L avg. monthly **2 violations above limit**
	27.1 avg daily max 46.3 (95^{th} percentile)	45 mg/L daily max **3 violations above limit**
BOD lbs/d	5.2 avg monthly 15.5 (95^{th} percentile)	20 lbs/d avg. monthly
	12.2 avg daily max 35.8 (95^{th} percentile)	30 lbs/d daily max **5 violations above limit**

Parameter	Effluent average*, maximum or minimum as specified	Limit or Design Value
BOD % removal mg/L	91.7% avg monthly	No limit. (Current permits use 85% removal min.)
TSS mg/L	13.2 avg monthly 21 (95th percentile)	30 mg/L avg. monthly
	19.0 avg daily 36 (95th percentile)	45 mg/L daily max
TSS lbs/d	3.4 avg monthly 14 (95th percentile)	26 lbs/d avg. monthly
	7.9 avg daily 26.5 (95th percentile)	39 lbs/day daily max **1 violation above limit**
TSS % removal mg/L	91.0% avg monthly	No limit. (Current permits use 85% removal min.)
Chlorine residual mg/L	1.27 avg 2.14 (95th percentile)	No limit
Fecal Coliform col./100 ml	22.6 avg monthly 86.8 (95th percentile)	200/100 ml monthly
	89.2 avg weekly 300 (95th percentile)	400/100ml weekly

*The averages in table 1 are based on all three years of monthly (DMR) reports. The 95th percentiles are based on all three years of monthly DMR reports, which means that 95 percent of the time the plant was below the given flow during those three years. Average weekly values are averages of the maximum monthly values of all three years (most parameters in the DMRs were measured only once per week making the maximum value the compliance value for the weekly average). The average daily max means: the average of three years of the maximum daily value in a given month.

There were four occurrences of pH between 5.2 to 5.8 over the last three years. The pH problem is being looked into and worked on by the Permittee. The flow problem appears to be the result of I&I and not due to growth in the community. Therefore, a beefed-up I&I program would be recommended over developing a new facility plan. There were two and three violations of BOD mg/L monthly and daily maximum limits respectively. There were five violations of BOD lbs/day daily maximum limit. There was one violation of the TSS lbs/day limit. The Clallam Bay facility appears to have difficulty meeting BOD limits 95 percent of the time as shown with the percentiles given in Table 1.

The Clallam Bay facility has a certified laboratory that is accredited to run tests for BOD_5, dissolved oxygen, total residual chlorine, pH, TSS, and fecal coliform.

SEPA COMPLIANCE

There is no construction or other State Environmental Policy Act (SEPA) related activity that will require compliance with SEPA in the near future.

PROPOSED PERMIT LIMITATIONS

Federal and state regulations require that effluent limitations set forth in a NPDES permit must be either technology- or water quality-based. Technology-based limitations for municipal discharges are set by regulation (40 CFR 133, and Chapters 173-220 and 173-221 WAC). Water quality-based limitations are based upon compliance with the Surface Water Quality Standards (Chapter 173-201A WAC), Ground Water Standards (Chapter 173-200 WAC), Sediment Quality Standards (Chapter 173-204 WAC) or the

National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992.) The most stringent of these types of limits must be chosen for each of the parameters of concern. Each of these types of limits is described in more detail below.

The limits in this permit are based in part on information received in the application and DMRs. The effluent constituents in the application were evaluated on a technology- and water quality-basis. The limits necessary to meet the rules and regulations of the state of Washington were determined and included in this permit. The Department does not develop effluent limits for all pollutants that may be reported on the application as present in the effluent**.** Some pollutants are not treatable at the concentrations reported, are not controllable at the source, are not listed in regulation, and do not have a reasonable potential to cause a water quality violation**.** Effluent limits are not always developed for pollutants that may be in the discharge but not reported as present in the application. In those circumstances the permit does not authorize discharge of the non-reported pollutants. Effluent discharge conditions may change from the conditions reported in the permit application. If significant changes occur in any constituent, as described in 40 CFR 122.42(a), the Permittee is required to notify the Department. The Permittee may be in violation of the permit until the permit is modified to reflect additional discharge of pollutants.

DESIGN CRITERIA

In accordance with WAC 173-220-150 (1)(g), flows or waste loadings shall not exceed approved design criteria.

The design criteria for this treatment facility are taken from the engineering report prepared by Culp, Wesner, Culp in 1985 entitled *Clallam Bay and Sekiu Wastewater Treatment Plants Expansion and Upgrading, Ten Percent Design Report,* and are as follows:

Table 1: Design Standards for Clallam Bay WWTP.

Parameter	Design Quantity
Monthly average flow (max. month)	0.12 MGD
BOD_5 influent loading	135 Lb./day
TSS influent loading	171 Lb./day
Design population equivalent	713

TECHNOLOGY-BASED EFFLUENT LIMITATIONS

Municipal wastewater treatment plants are a category of discharger for which technology-based effluent limits have been promulgated by federal and state regulations. These effluent limitations are given in the Code of Federal Regulations (CFR) 40 CFR Part 133 (federal) and in Chapter 173-221 WAC (state). These regulations are performance standards that constitute all known available and reasonable methods of prevention, control, and treatment for municipal wastewater.

The following technology-based limits for pH, fecal coliform, BOD_5, and TSS are taken from Chapter 173-221 WAC are:

Table 2: Technology-based Limits.

Parameter	Limit
pH:	shall be within the range of 6 to 9 standard units.

Parameter	Limit
Fecal Coliform Bacteria	Monthly Geometric Mean = 200 organisms/100 ml Weekly Geometric Mean = 400 organisms/100 ml
BOD_5 (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 45 mg/L
TSS (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 45 mg/L
	Average Monthly Limit = 0.5 mg/L Average Weekly Limit = 0.75 mg/L

The technology-based monthly average limitation for chlorine is derived from standard operating practices. The Water Pollution Control Federation's Chlorination of Wastewater (1976) states that a properly designed and maintained wastewater treatment plant can achieve adequate disinfection if a 0.5 mg/liter chlorine residual is maintained after fifteen minutes of contact time. See also Metcalf and Eddy, Wastewater Engineering, Treatment, Disposal and Reuse, Third Edition, 1991. A treatment plant that provides adequate chlorination contact time can meet the 0.5 mg/liter chlorine limit on a monthly average basis. According to WAC 173-221-030(11)(b), the corresponding weekly average is 0.75 mg/liter.

The existing permit does not have a chlorine limit. Under the toxic evaluation of this fact sheet, chlorine was not found to have a reasonable potential to violate the chlorine criterion. The Permittee is proposing an ultra violet (UV) disinfection system that will likely be installed in the next year.

The following technology-based mass limits for BOD and TSS are based on WAC 173-220-130(3)(b) and 173-221-030(11)(b).

Monthly effluent mass loadings for BOD (lbs/day) were calculated as the maximum monthly influent design loading 135 lbs/day) x 0.15 = 20 lbs./day.

The weekly average effluent mass loading is calculated as 1.5 x monthly loading = 30 lbs/day.

Monthly effluent mass loadings for TSS (lbs/day) were calculated as the maximum monthly influent design loading 171 lbs/day) x 0.15 = 26 lbs/day.

The weekly average effluent mass loading is calculated as 1.5 x monthly loading = 39 lbs/day.

SURFACE WATER QUALITY-BASED EFFLUENT LIMITATIONS

In order to protect existing water quality and preserve the designated beneficial uses of Washington's surface waters, WAC 173-201A-060 states that waste discharge permits shall be conditioned such that the discharge will meet established Surface Water Quality Standards. The Washington State Surface Water Quality Standards (Chapter 173-201A WAC) is a state regulation designed to protect the beneficial uses of the surface waters of the state. Water quality-based effluent limitations may be based on an individual waste load allocation (WLA) or on a WLA developed during a basin-wide total maximum daily loading

study (TMDL). At this time there is no 303(d) listing for this section of the Strait of Juan de Fuca. Therefore, there are no WLAs or TMDLs.

NUMERICAL CRITERIA FOR THE PROTECTION OF AQUATIC LIFE

"Numerical" water quality criteria are numerical values set forth in the state of Washington's Water Quality Standards for Surface Waters (Chapter 173-201A WAC). They specify the levels of pollutants allowed in a receiving water while remaining protective of aquatic life. Numerical criteria set forth in the Water Quality Standards are used along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limitations, they must be used in a permit.

NUMERICAL CRITERIA FOR THE PROTECTION OF HUMAN HEALTH

The state was issued 91 numeric water quality criteria for the protection of human health by the U.S. EPA (EPA 1992). These criteria are designed to protect humans from cancer and other disease and are primarily applicable to fish and shellfish consumption and drinking water from surface waters.

NARRATIVE CRITERIA

In addition to numerical criteria, "narrative" water quality criteria (WAC 173-201A-030) limit toxic, radioactive, or deleterious material concentrations below those which have the potential to adversely affect characteristic water uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health. Narrative criteria protect the specific beneficial uses of all fresh (WAC 173-201A-130) and marine (WAC 173-201A-140) waters in the state of Washington.

ANTIDEGRADATION

The state of Washington's Antidegradation Policy requires that discharges into a receiving water shall not further degrade the existing water quality of the water body. In cases where the natural conditions of a receiving water are of lower quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. Similarly, when the natural conditions of a receiving water are of higher quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. More information on the state Antidegradation Policy can be obtained by referring to WAC 173-201A-070.

The Department has reviewed existing records and is unable to determine if ambient water quality is either higher or lower than the designated classification criteria given in Chapter 173-201A WAC; therefore, the Department will use the designated classification criteria for this water body in the proposed permit. The discharges authorized by this proposed permit should not cause a loss of beneficial uses.

CRITICAL CONDITIONS

Surface water quality-based limits are derived for the waterbody's critical condition, which represents the receiving water and waste discharge condition with the highest potential for adverse impact on the aquatic biota, human health, and existing or characteristic water body uses.

MIXING ZONES

The Water Quality Standards allow the Department to authorize mixing zones around a point of discharge in establishing surface water quality-based effluent limits. Both "acute" and "chronic" mixing zones may be authorized for pollutants that can have a toxic effect on the aquatic environment near the point of discharge. The concentration of pollutants at the boundary of these mixing zones may not exceed the

numerical criteria for that type of zone. Mixing zones can only be authorized for discharges that are receiving all known, available, and reasonable methods of prevention, control and treatment (AKART) and in accordance with other mixing zone requirements of WAC 173-201A-100.

The National Toxics Rule (EPA, 1992) allows the chronic mixing zone to be used to meet human health criteria.

DESCRIPTION OF THE RECEIVING WATER

The facility discharges to the Strait of Juan de Fuca which is designated as a Class AA receiving water in the vicinity of the outfall. Other nearby point source outfalls include Sekiu WWTP which includes waste water from the Clallam Bay Correction Center WWTP. The Sekiu outfall is more than two miles from the Clallam Bay outfall. The Clallam Bay embayment does not go inland deeply from the Strait of Juan de Fuca. Therefore, the influence of the discharge mixing zones for Sekiu and Clallam Bay is unlikely to overlap. Both of these discharges are small. There are no identified significant nearby non-point sources of pollutants.

Characteristic uses of Class AA water include the following: water supply (domestic, industrial, agricultural); fish migration; fish and shellfish rearing, spawning and harvesting; wildlife habitat; primary contact recreation; sport fishing; boating and aesthetic enjoyment; commerce and navigation.

Water quality of this class shall markedly and uniformly exceed the requirements for all or substantially all uses.

SURFACE WATER QUALITY CRITERIA

Applicable criteria are defined in Chapter 173-201A WAC for aquatic biota. In addition, U.S. EPA has promulgated human health criteria for toxic pollutants (EPA 1992). Criteria for this discharge are summarized below:

Fecal Coliforms	14 organisms/100 ml maximum geometric mean, and not have more than 10 percent of all samples obtained and for calculating the geometric mean value exceeding 43 colonies/100 ml.
Dissolved Oxygen	7 mg/L minimum
Temperature	13 degrees Celsius maximum or incremental increases above background
pH	7.0 to 8.5 standard units
Turbidity	less than 5 NTUs above background
Toxics	No toxics in toxic amounts (see Appendix C for numeric criteria for toxics of concern for this discharge)

CONSIDERATION OF SURFACE WATER QUALITY-BASED LIMITS FOR NUMERIC CRITERIA

Pollutant concentrations in the proposed discharge exceed water quality criteria with technology-based controls which the Department has determined to be AKART. A mixing zone is authorized in accordance with the geometric configuration, flow restriction, and other restrictions for mixing zones in Chapter 173-201A WAC and are defined as follows:

The dilution factors of effluent to receiving water that occur within these zones have been determined at the critical condition by the use of CORMIX dilution model. The dilution factors have been determined to be:

	Acute	**Chronic**
Dilution Factors for Aquatic Life	252	1000

One of the big differences between the Clallam Bay discharge and the Sekiu discharge is that the Clallam Bay outfall has a diffuser and the Sekiu does not. This difference effects the outcome of the dilution ratios and in the end, whether or not a pollutant meets standards at the edge of the mixing zone.

Pollutants in an effluent may affect the aquatic environment near the point of discharge (near field) or at a considerable distance from the point of discharge (far field). Toxic pollutants, for example, are near-field pollutants--their adverse effects diminish rapidly with mixing in the receiving water. Conversely, a pollutant such as BOD is a far-field pollutant whose adverse effect occurs away from the discharge even after dilution has occurred. Thus, the method of calculating water quality-based effluent limits varies with the point at which the pollutant has its maximum effect.

The derivation of water quality-based limits also takes into account the variability of the pollutant concentrations in both the effluent and the receiving water.

The permit writer obtained the ambient background data used for this permit from the Department's ambient water database. Table 4 lists the receiving water ambient data and included the current velocity from the *San Juan Current Guide* stations 820 and 855 for Pillar Pt. and Ediz Hook:

Table 4: Receiving Water Ambient Data

Parameter	Value used
Current Velocity	0.44 m/s (50^{th} percentile), 0.14 m/s (10^{th} percentile)
Depth	18 feet
Temperature	11.8 ^{o} C
pH (high)	8.1
Total Ammonia-N	0.02 mg/L
Fecal Coliform	8/100 ml
Salinity	31.14

BOD_5--This discharge with technology-based limitations results in a small amount of BOD loading relative to the large amount of dilution occurring in the receiving water at critical conditions. Technology-based limitations will be protective of dissolved oxygen criteria in the receiving water.

The impact of BOD on the receiving water was modeled using simple mixing at critical condition and with the technology-based effluent limitation for BOD_5 described under "Technology-Based Effluent Limitations" above. With the dilution ratio of 1000 to 1 and an ambient DO value at the standard of 7.0, there would be a change of less than 0.2 mg/L. The calculations used to determine dissolved oxygen impacts are shown in Appendix C.

Temperature--The impact of the discharge on the temperature of the receiving water was modeled by simple mixing analysis at critical condition. The receiving water temperature at the critical condition is 11.8^{o}C and the effluent temperature is 19^{o}C. The predicted resultant rise in temperature at the boundary of the chronic mixing zone is less than 0.01^{o}C.

Under critical conditions there is no predicted violation of the Water Quality Standards for Surface Waters. Therefore, no effluent limitation for temperature was placed in the proposed permit.

pH--Because of the high buffering capacity of marine water, compliance with the technology-based limits of 6 to 9 will assure compliance with the Water Quality Standards for Surface Waters.

Fecal coliform--The numbers of fecal coliform were modeled by simple mixing analysis using the technology-based limit of 400 organisms per 100 ml and a dilution factor of 1000.

Under critical conditions there is no predicted violation of the Water Quality Standards for Surface Waters with the technology-based limit. Therefore, the technology-based effluent limitation for fecal coliform bacteria was placed in the proposed permit.

Toxic Pollutants--Federal regulations (40 CFR 122.44) require NPDES permits to contain effluent limits for toxic chemicals in an effluent whenever there is a reasonable potential for those chemicals to exceed the surface water quality criteria. This process occurs concurrently with the derivation of technology-based effluent limits. Facilities with technology-based effluent limits defined in regulation are not exempted from meeting the Water Quality Standards for Surface Waters or from having surface water quality-based effluent limits.

The following toxics were determined to be present in the discharge: chlorine, and ammonia. A reasonable potential analysis (See Appendix C) was conducted on these parameters to determine whether or not effluent limitations would be required in this permit.

The determination of the reasonable potential for ammonia and chlorine to exceed the water quality criteria was evaluated with procedures given in EPA, 1991 (Appendix C) at the critical condition. The critical condition in this case would likely occur during the summer months. The parameters used in the critical condition modeling are as follows: acute dilution factor 252, chronic dilution factor 1000, receiving water temperature 11.8^{o}C, ambient ammonia 0.02 mg/L, ambient chlorine 0 mg/L.

No valid ambient background data was available for chlorine. No chlorine would be assumed to be present in the background, therefore, a value of zero chlorine was used for background in determining reasonable potential. The determination resulted in no reasonable potential to violate standards for chlorine.

Ammonia was not monitored in the effluent, therefore, a value of 50 mg/L ammonia was used. This value of 50 mg/L ammonia is much higher than expected from this type of plant and did not result in a reasonable potential to violate standards. No chlorine or ammonia limits will be placed in the new permit.

Because Clallam Bay is a small community with no industrial discharges and only a few commercial operations, metals are not expected in the effluent. Metals testing will not be required in the permit. However, if industry does become an issues, metals testing may be required in the future.

WHOLE EFFLUENT TOXICITY

The Water Quality Standards for Surface Waters require that the effluent not cause toxic effects in the receiving waters. Many toxic pollutants cannot be detected by commonly available detection methods. However, toxicity can be measured directly by exposing living organisms to the wastewater in laboratory tests and measuring the response of the organisms. Toxicity tests measure the aggregate toxicity of the whole effluent, and therefore, this approach is called whole effluent toxicity (WET) testing.

Toxicity caused by unidentified pollutants is not expected in the effluent from this discharge as determined by the screening criteria given in Chapter 173-205 WAC. Therefore, no whole effluent toxicity testing is required in this permit. The Department may require effluent toxicity testing in the future if it receives information that toxicity may be present in this effluent.

HUMAN HEALTH

Washington's water quality standards now include 91 numeric health-based criteria that must be considered in NPDES permits. These criteria were promulgated for the state by the U.S. EPA in its National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992).

The Department has determined that the applicant's discharge is unlikely to contain chemicals regulated for human health, and does not contain chemicals of concern based on existing data or knowledge. The discharge will be re-evaluated for impacts to human health at the next permit reissuance.

SEDIMENT QUALITY

The Department has promulgated aquatic sediment standards (Chapter 173-204 WAC) to protect aquatic biota and human health. These standards state that the Department may require Permittees to evaluate the potential for the discharge to cause a violation of applicable standards (WAC 173-204-400).

The Department has determined through a review of the discharger characteristics and effluent characteristics that this discharge has no reasonable potential to violate the Sediment Management Standards.

GROUND WATER QUALITY LIMITATIONS

The Department has promulgated Ground Water Quality Standards (Chapter 173-200 WAC) to protect uses of ground water. Permits issued by the Department shall be conditioned in such a manner so as not to allow violations of those standards (WAC 173-200-100).

This Permittee has no discharge to ground, and therefore, no limitations are required based on potential effects to ground water.

TABLE 5: COMPARISON OF EFFLUENT LIMITS WITH THE EXISTING PERMIT ISSUED AUGUST 22, 1985

Parameter	Old Existing Limits	New Proposed Limits
BOD_5	Monthly Average 30 mg/L, 20 lbs/day Daily Max 45 mg/L, 30 lbs/day	Monthly Average 30 mg/L, 20 lbs/day Weekly Average 45 mg/L, 30 lbs/day
TSS	Monthly Average 30 mg/L, 26 lbs/day Daily Max 45 mg/L, 39 lbs/day	Monthly Average 30 mg/L, 26 lbs/day Weekly Average 45 mg/L, 39 lbs/day
Fecal coliform bacteria	Monthly Average 200 col./100ml Daily Max 400 col./100ml	Monthly Average 200 col./100ml Weekly Average 400 col./100ml
pH	Shall not be outside the range 6.0 – 9.0	Shall not be outside the range 6.0 – 9.0

MONITORING REQUIREMENTS

Monitoring, recording, and reporting are required (WAC 173-220-210 and 40 CFR 122.41) to verify that the treatment process is functioning correctly and the effluent limitations are being achieved.

The monitoring schedule is detailed in the proposed permit under Condition S.2. Specified monitoring frequencies take into account the quantity and variability of discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring. The required monitoring frequency is consistent with agency guidance given in the current version of the Department's *Permit Writer's Manual* (July 1994) for an RBC plant of less than one mgd.

LAB ACCREDITATION

With the exception of certain parameters the permit requires all monitoring data to be prepared by a laboratory registered or accredited under the provisions of Chapter 173-50 WAC, *Accreditation of*

Environmental Laboratories. The laboratory at this facility is accredited for: general chemistry and microbiology, which includes: BOD_5, dissolved oxygen, total residual chlorine, pH, TSS, and fecal coliform.

OTHER PERMIT CONDITIONS

REPORTING AND RECORDKEEPING

The conditions of S3 are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 173-220-210).

PREVENTION OF FACILITY OVERLOADING

Overloading of the treatment plant is a violation of the terms and conditions of the permit. To prevent this from occurring, RCW 90.48.110 and WAC 173-220-150 require the Permittee to take the actions detailed in proposed permit requirement S.4 to plan expansions or modifications before existing capacity is reached and to report and correct conditions that could result in new or increased discharges of pollutants. Condition S.4 restricts the amount of flow.

OPERATION AND MAINTENANCE (O&M)

The proposed permit contains Condition S.5 as authorized under RCW 90.48.110, WAC 173-220-150, Chapter 173-230 WAC, and WAC 173-240-080. It is included to ensure proper operation and regular maintenance of equipment, and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment. Because many changes have taken place in the system since the last permit was written, including the proposal for a new UV disinfection system soon to come on line, a new O&M manual will be due during the new permit.

RESIDUAL SOLIDS HANDLING

To prevent water quality problems the Permittee is required in permit Condition S7 to store and handle all residual solids (grit, screenings, scum, sludge, and other solid waste) in accordance with the requirements of RCW 90.48.080 and state Water Quality Standards.

The final use and disposal of sewage sludge from this facility is regulated by U.S. EPA under 40 CFR 503. The disposal of other solid waste is under the Statewide Biosolids Permit and must be done in accordance with WAC 173-308, which is administered by the Solid Waste Program at the Department.

PRETREATMENT

Annual Submittal of List of Industrial Users

This provision requires the POTW to submit annually a list of existing and proposed SIUs and PSIUs. This requirement is intended to update the Department on an annual basis of the status of industrial users in the publicly owned treatment works (POTWs) service area, without requiring the POTW to go through the process of performing a formal Industrial User Survey. This provision is normally applied to POTWs not serving industrial or commercial users. Although this permit does not require performance of an Industrial User Survey, the Permittee is nevertheless required to take adequate continuous routine measures to identify existing and new industrial discharges.

Duty to Enforce Discharge Prohibitions

This provision prohibits the POTW from authorizing or permitting an industrial discharger to discharge certain types of waste into the sanitary sewer. The first portion of the provision prohibits acceptance of pollutants which cause pass through or interference. The definitions of pass through and interference are in Appendix B of the fact sheet.

The second portion of this provision prohibits the POTW from accepting certain specific types of wastes, namely those which are explosive, flammable, excessively acidic, basic, otherwise corrosive, or obstructive to the system. In addition wastes with excessive BOD, petroleum based oils, or which result in toxic gases are prohibited to be discharged. The regulatory basis for these prohibitions is 40 CFR Part 403, with the exception of the pH provisions which are based on WAC 173-216-060.

The third portion of this provision prohibits certain types of discharges unless the POTW receives prior authorization from the Department. The discharges include cooling water in significant volumes, stormwater and other direct inflow sources, and wastewaters significantly affecting system hydraulic loading, which do not require treatment.

Support by the Department for Developing Partial Pretreatment Program by POTW

The Department has committed to providing technical and legal assistance to the Permittee in fulfilling these joint obligations, in particular assistance with developing an adequate sewer use ordinance, notification procedures, enforcement guidelines, and developing local limits and inspection procedures.

GENERAL CONDITIONS

General Conditions are based directly on state and federal law and regulations and have been standardized for all individual municipal NPDES permits issued by the Department.

PERMIT ISSUANCE PROCEDURES

PERMIT MODIFICATIONS

The Department may modify this permit to impose numerical limitations, if necessary to meet Water Quality Standards, Sediment Quality Standards, or Ground Water Standards, based on new information obtained from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

The Department may also modify this permit as a result of new or amended state or federal regulations.

RECOMMENDATION FOR PERMIT ISSUANCE

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to protect human health, aquatic life, and the beneficial uses of waters of the state of Washington. The Department proposes that this permit be issued for five years.

REFERENCES FOR TEXT AND APPENDICES

Environmental Protection Agency (EPA)

1992. National Toxics Rule. Federal Register, V. 57, No. 246, Tuesday, December 22, 1992.

1991. Technical Support Document for Water Quality-based Toxics Control. EPA/505/2-90-001.

1988. Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling. USEPA Office of Water, Washington, D.C.

1985. Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants in Surface and Ground Water. EPA/600/6-85/002a.

1983. Water Quality Standards Handbook. USEPA Office of Water, Washington, D.C.

Metcalf and Eddy.

1991. Wastewater Engineering, Treatment, Disposal, and Reuse. Third Edition.

Tsivoglou, E.C., and J.R. Wallace.

1972. Characterization of Stream Reaeration Capacity. EPA-R3-72-012. (Cited in EPA 1985 op.cit.)

Washington State Department of Ecology.

1994. Permit Writer's Manual. Publication Number 92-109

Water Pollution Control Federation.

1976. Chlorination of Wastewater.

Wright, R.M., and A.J. McDonnell.

1979. In-stream Deoxygenation Rate Prediction. Journal Environmental Engineering Division, ASCE. 105(EE2). (Cited in EPA 1985 op.cit.)

APPENDIX A--PUBLIC INVOLVEMENT INFORMATION

The Department has tentatively determined to reissue a permit to the applicant listed on page 1 of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

Public notice of application was published on August 19, 2001, and August 26, 2001, in the *Peninsula Daily News* to inform the public that an application had been submitted and to invite comment on the reissuance of this permit.

The Department will publish a Public Notice of Draft (PNOD) on July 17, 2002, in the *Forks Forum* to inform the public that a draft permit and fact sheet are available for review. Interested persons are invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to:

Water Quality Permit Coordinator
Department of Ecology
Southwest Regional Office
P.O. Box 47775
Olympia, WA 98504-7775.

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the 30-day comment period to the address above. The request for a hearing shall indicate the interest of the party and the reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-220-090). Public notice regarding any hearing will be circulated at least 30 days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing (WAC 173-220-100).

Comments should reference specific text followed by proposed modification or concern when possible. Comments may address technical issues, accuracy and completeness of information, the scope of the facility's proposed coverage, adequacy of environmental protection, permit conditions, or any other concern that would result from issuance of this permit.

The Department will consider all comments received within 30 days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone, (360) 407-6554, or by writing to the address listed above.

This permit and fact sheet were written by Eric Schlorff.

APPENDIX B--GLOSSARY

Acute Toxicity--The lethal effect of a pollutant on an organism that occurs within a short period of time, usually 48 to 96 hours.

AKART-- An acronym for "all known, available, and reasonable methods of prevention, control, and treatment".

Ambient Water Quality--The existing environmental condition of the water in a receiving water body.

Ammonia--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Average Monthly Discharge Limitation --The highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month (except in the case of fecal coliform). The daily discharge is calculated as the average measurement of the pollutant over the day.

Average Weekly Discharge Limitation -- The highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week. The daily discharge is calculated as the average measurement of the pollutant over the day.

Best Management Practices (BMPs)--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD_5--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD_5 is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass--The intentional diversion of waste streams from any portion of a treatment facility.

CBOD5 – The quantity of oxygen utilized by a mixed population of microorganisms acting on the nutrients in the sample in an aerobic oxidation for five days at a controlled temperature of 20 degrees Celcius, with an inhibitory agent added to prevent the oxidation of nitrogen compounds. The method for determining CBOD5 is given in 40 CFR Part 136.

Chlorine--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

Chronic Toxicity--The effect of a pollutant on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

Clean Water Act (CWA)--The Federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

Combined Sewer Overflow (CSO)--The event during which excess combined sewage flow caused by inflow is discharged from a combined sewer, rather than conveyed to the sewage treatment plant because either the capacity of the treatment plant or the combined sewer is exceeded.

Compliance Inspection - Without Sampling--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance Inspection - With Sampling--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the percent removal requirement. Additional sampling may be conducted.

Composite Sample--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing a minimum of four discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots.

Construction Activity--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

Continuous Monitoring –Uninterrupted, unless otherwise noted in the permit.

Critical Condition--The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. This situation usually occurs when the flow within a water body is low, thus, its ability to dilute effluent is reduced.

Dilution Factor--A measure of the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. Expressed as the inverse of the effluent fraction e.g., a dilution factor of 10 means the effluent comprises 10% by volume and the receiving water 90%.

Engineering Report--A document which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Fecal Coliform Bacteria--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

Grab Sample--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

Industrial User-- A discharger of wastewater to the sanitary sewer which is not sanitary wastewater or is not equivalent to sanitary wastewater in character.

Industrial Wastewater--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Infiltration and Inflow (I/I)--"Infiltration" means the addition of ground water into a sewer through joints, the sewer pipe material, cracks, and other defects. "Inflow" means the addition of precipitation-caused drainage from roof drains, yard drains, basement drains, street catch basins, etc., into a sewer.

Interference -- A discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal and;

Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to subtitle D of the SWDA), sludge regulations appearing in 40 CFR Part 507, the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

Major Facility--A facility discharging to surface water with an EPA rating score of > 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Maximum Daily Discharge Limitation--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Method Detection Level (MDL)--The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

Minor Facility--A facility discharging to surface water with an EPA rating score of < 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Mixing Zone--A volume that surrounds an effluent discharge within which water quality criteria may be exceeded. The area of the authorized mixing zone is specified in a facility's permit and follows procedures outlined in State regulations (Chapter 173-201A WAC).

National Pollutant Discharge Elimination System (NPDES)--The NPDES (Section 402 of the Clean Water Act) is the Federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the State of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington State permit writers are joint NPDES/State permits issued under both State and Federal laws.

Pass through -- A discharge which exits the POTW into waters of the–State in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation), or which is a cause of a violation of State water quality standards.

pH--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Potential Significant Industrial User--A potential significant industrial user is defined as an Industrial User which does not meet the criteria for a Significant Industrial User, but which discharges wastewater meeting one or more of the following criteria:

a. Exceeds 0.5 % of treatment plant design capacity criteria and discharges <25,000 gallons per day or;

b. Is a member of a group of similar industrial users which, taken together, have the potential to cause pass through or interference at the POTW (e.g. facilities which develop photographic film or paper, and car washes).

The Department may determine that a discharger initially classified as a potential significant industrial user should be managed as a significant industrial user.

Quantitation Level (QL)-- A calculated value five times the MDL (method detection level).

Significant Industrial User (SIU)--

1) All industrial users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N and;

2) Any other industrial user that: discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (excluding sanitary, noncontact cooling, and boiler blow-down wastewater); contributes a process wastestream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority* on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement (in accordance with 40 CFR 403.8(f)(6)).

Upon finding that the industrial user meeting the criteria in paragraph 2, above, has no reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement, the Control Authority* may at any time, on its own initiative or in response to a petition received from an industrial user or POTW, and in accordance with 40 CFR 403.8(f)(6), determine that such industrial user is not a significant industrial user.

*The term "Control Authority" refers to the Washington State Department of Ecology in the case of non-delegated POTWs or to the POTW in the case of delegated POTWs.

State Waters--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, wetlands, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Technology-based Effluent Limit--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Total Suspended Solids (TSS)--Total suspended solids are the particulate materials in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

Upset--An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventative maintenance, or careless or improper operation.

Water Quality-based Effluent Limit--A limit on the concentration or mass of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into a receiving water.

APPENDIX C--TECHNICAL CALCULATIONS

Several of the Excel® spreadsheet tools used to evaluate a discharger's ability to meet Washington State water quality standards can be found on the Department's homepage at http://www.ecy.wa.gov.

Calculation of seawater fraction of un-ionized ammonia
from Hampson (1977). Un-ionized ammonia criteria for
salt water are from EPA 440/5-88-004.

Based on Lotus File NH3SALT.WK1 Revised 19-Oct-93

INPUT	
1. Temperature (deg C):	11.3
2. pH:	8.1
3. Salinity (g/Kg):	30.9

OUTPUT	
1. Pressure (atm; EPA criteria assumes 1 atm):	1.0
2. Molal Ionic Strength (not valid if >0.85):	0.636
3. pKa8 at 25 deg C (Whitfield model "B"):	9.319
4. Percent of Total Ammonia Present as Unionized:	2.127%
5. Unionized ammonia criteria (mg un-ionized NH3 per liter) from EPA 440/5-88-004	
Acute:	0.233
Chronic:	0.035
6. Total Ammonia Criteria (mg/L as NH3)	
Acute:	10.95
Chronic:	1.65
7. Total Ammonia Criteria (mg/L as NH3-N)	
Acute:	9.00
Chronic:	1.35

Requirement for Permit Limits

Determination of Reasonable Potential to Violate Standards at

the Edge of the Mixing Zone.
Based on EPA/505/2-90-001

Notes:

INPUT	Ammonia	Chlorine
Confidence Level and Probability Basis:	**0.95**	**0.95**
Coefficient of Variation for the Effluent Concentration (CV) (0.6 or a calculated CV if there are more than 10 data points):	**0.60**	**0.60**
Number of Effluent Samples or Data Points (ND):	**1.00**	**36.00**
Highest Effluent Concentration or Value (HV): mg/L	**50.00**	**2.14**
Dilution Factors (1/{Effluent Volume Fraction}) or plumes model		
Acute Receiving Water Dilution Factor:	**252.00**	**252.00**
Chronic Receiving Water Dilution Factor:	**1000.00**	**1000.00**
Water Quality Standards (Concentration)		
Acute (one-hour) Criteria: mg/L	**9.02**	**0.013**
Chronic (n-day) Criteria: mg/L	**1.3500**	**0.0075**
Upstream Receiving Water Concentration:		
Upstream Concentration for Acute Condition (7Q10): 95th%-tile		
Upstream Concentration for Chronic Condition (7Q10): 90th%-tile		
MECB: 1-9 data points, highest value by 2; 10-50 the highest value; >50 calculate 90th %-tile mg/L	**0.02**	**0.00**

OUTPUT		
Percentile Represented by the Highest Concentration in Data Set		
(p_n) = (1 - confidence level)^1/ND	0.05	0.92
Normal Distribution Value for 95th Percentile	1.64	1.64
Normal Distribution Value for 5th Percentile	-1.64	1.41
$\square^2 = \ln(CV^2+1)$	0.31	0.31
C95 = exp(1.645Sigma -0.5Sigma^2)	2.13	2.13
C5 = exp(-1.645Sigma -0.5Sigma^2)	0.34	1.87
Reasonable Potential Multiplier = C95/C5	6.20	1.14

Maximum Expected Concentration of Pollutant in Effluent (MEC):	309.89	2.44
Acute - Concentration of Pollutant at the Edge of the Mixing Zone (CP):	1.23	0.01
Chronic - Concentration of Pollutant at the Edge of the Mixing Zone (CP):	0.31	0.00
Acute - Concentration of Pollutant at the Edge of the Mixing Zone (CP) with .95 trans fact.:	22.84	22.84
Chronic - Concentration of Pollutant at the Edge of the Mixing Zone (CP)with .95 trans fact:	22.84	22.84
Reasonable Potential to Violate Acute Criteria at the Edge of the Mixing Zone (RP):	**NO**	**NO**
Reasonable Potential to Violate Chronic Criteria at the Edge of the Mixing Zone (RP):	**NO**	**NO**

Dissolved oxygen concentration following initial dilution.

References: EPA/600/6-85/002b and EPA/430/9-82-011

Based on Lotus File IDOD2.WK1 Revised 19-Oct-93

INPUT	
1. Dilution Factor at Mixing Zone Boundary:	1000
2. Ambient Dissolved Oxygen Concentration (mg/L):	7
3. Effluent Dissolved Oxygen Concentration (mg/L):	1.5
4. Effluent Immediate Dissolved Oxygen Demand (mg/L):	0

OUTPUT	
Dissolved Oxygen at Mixing Zone Boundary (mg/L):	6.99

procedure in EPA's DESCON program (EPA, 1988. Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling. USEPA Office of Water, Washington D.C.)

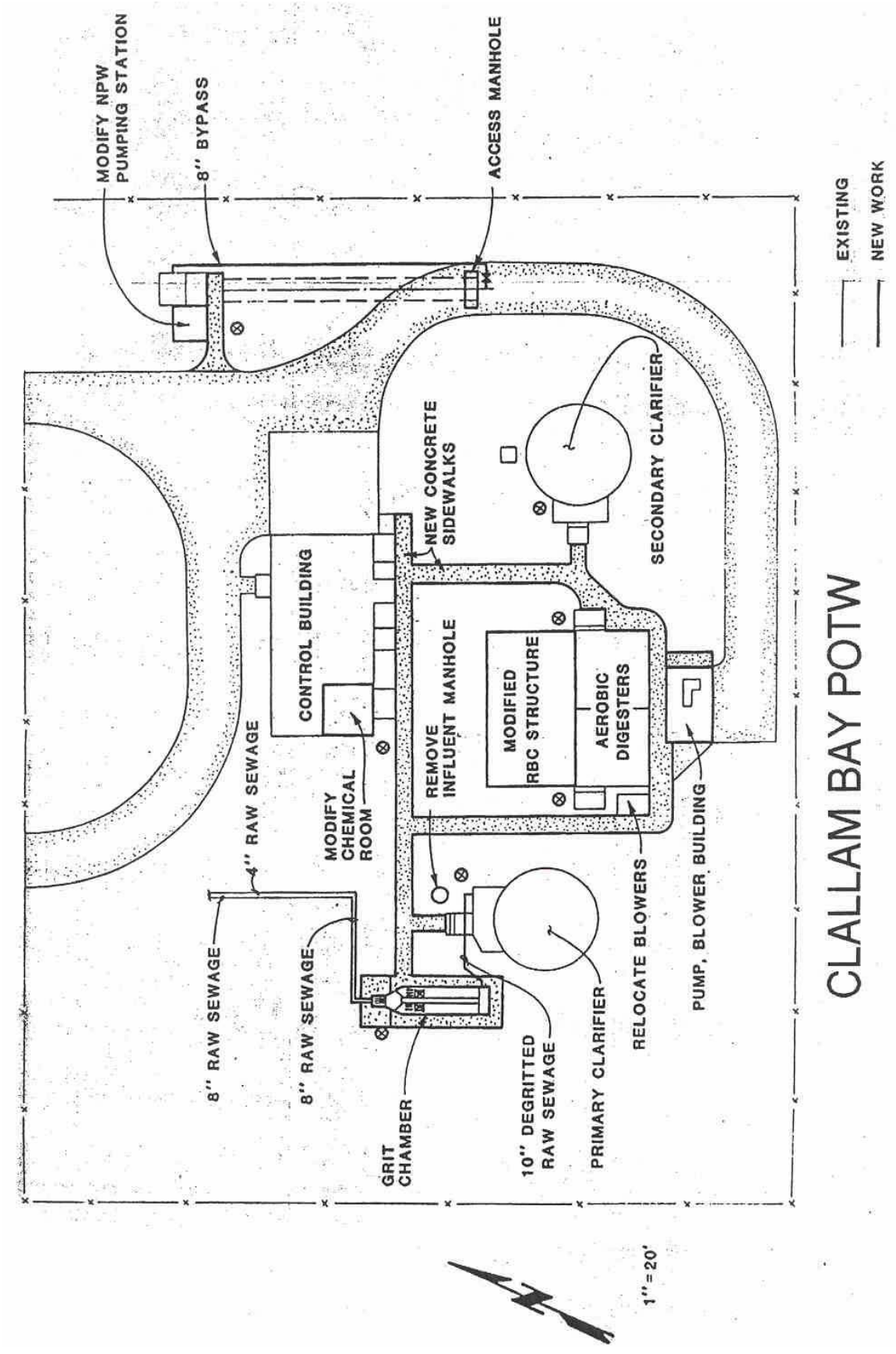
Based on Lotus File PHMIX2.WK1 Revised 19-Oct-93

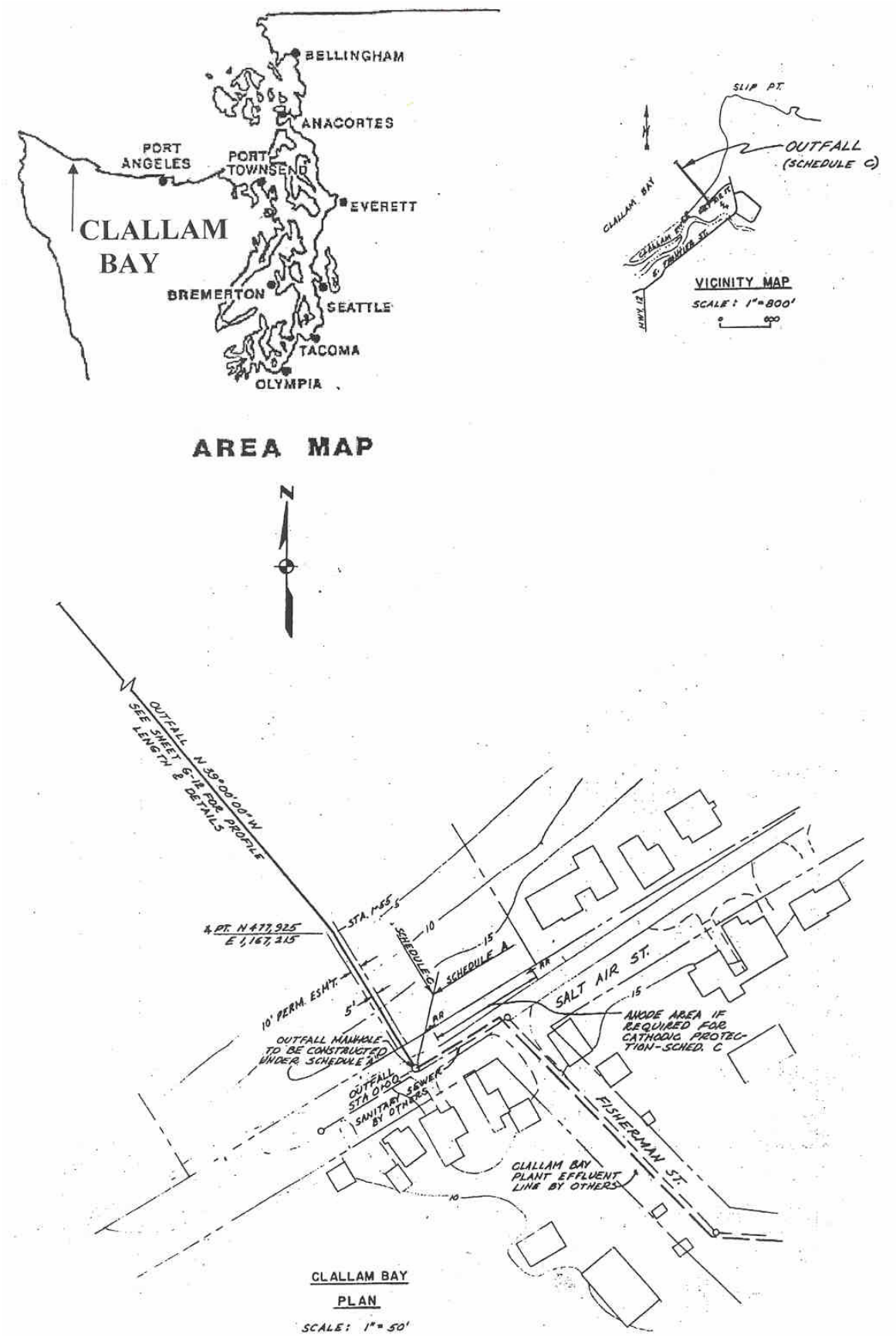
INPUT

1. DILUTION FACTOR AT MIXING ZONE BOUNDARY	1000.00 0
1. UPSTREAM/BACKGROUND CHARACTERISTICS	
Temperature (deg C):	11.80
pH:	8.10
Alkalinity (mg CaCO3/L) (typical low for salt water):	20000.0 0
2. EFFLUENT CHARACTERISTICS	
Temperature (deg C):	19.00
pH:	5.40
Alkalinity (mg CaCO3/L):	150.00

OUTPUT

1. IONIZATION CONSTANTS	
Upstream/Background pKa:	6.45
Effluent pKa:	6.39
2. IONIZATION FRACTIONS	
Upstream/Background Ionization Fraction:	0.98
Effluent Ionization Fraction:	0.09
3. TOTAL INORGANIC CARBON	
Upstream/Background Total Inorganic Carbon (mg CaCO3/L):	20445.1 4
Effluent Total Inorganic Carbon (mg CaCO3/L):	1612.89
4. CONDITIONS AT MIXING ZONE BOUNDARY	
Temperature (deg C):	11.81
Alkalinity (mg CaCO3/L):	19980.1 5
Total Inorganic Carbon (mg CaCO3/L):	20426.3 1
pKa:	6.45
pH at Mixing Zone Boundary:	8.10


CLALLAM BAY POTW
EXISTING
NEW WORK
MODIFY NPW PUMPING STATION
8" BYPASS
ACCESS MANHOLE
NEW CONCRETE SIDEWALKS
SECONDARY CLARIFIER
CONTROL BUILDING
MODIFY CHEMICAL ROOM
REMOVE INFLUENT MANHOLE
MODIFIED RBC STRUCTURE
AEROBIC DIGESTERS
4" RAW SEWAGE
8" RAW SEWAGE
8" RAW SEWAGE
GRIT CHAMBER
10" DEGRITTED RAW SEWAGE
PRIMARY CLARIFIER
RELOCATE BLOWERS
PUMP, BLOWER BUILDING
1" = 20'


BELLINGHAM
ANACORTES
PORT ANGELES
PORT TOWNSEND
EVERETT
CLALLAM BAY
BREMERTON
SEATTLE
TACOMA
OLYMPIA
AREA MAP
SLIP PT.
OUTFALL (SCHEDULE C)
CLALLAM BAY
VICINITY MAP
SCALE: 1"=800'
N
OUTFALL N 39°00'00" W SEE SHEET 8-18 FOR PROFILE LENGTH & DETAILS
4 PT. N 477,925 E 1,167,215
STA. 1+55
SCHEDULE C
SCHEDULE A
10' PERM. ESMT.
SALT AIR ST.
ANODE AREA IF REQUIRED FOR CATHODIC PROTECTION-SCHED. C
OUTFALL MANHOLE TO BE CONSTRUCTED UNDER SCHEDULE 'A'
OUTFALL STA 0+00
SANITARY SEWER BY OTHERS
FISHERMAN ST.
CLALLAM BAY PLANT EFFLUENT LINE BY OTHERS
CLALLAM BAY
PLAN
SCALE: 1"=50'

APPENDIX D--RESPONSE TO COMMENTS

Comments received from Frank Meriwether, Department of Health.

Comment: The proposed frequency for testing chlorine residual is five days each week, but the recommended levels (Table XIII-1B, Permit Writers Manual) is seven days each week. That is the frequency we would recommend as well.

Response: Chlorine residual testing has been changed from five days a week to seven days a week.